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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/017,416	12/18/2001	Suk Won Choi	8733.535.00	6434

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WASHINGTON, DC 20006

EXAMINER

NGUYEN, HOAN C

ART UNIT	PAPER NUMBER
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2871

DATE MAILED: 06/04/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)
	10/017,416	CHOI ET AL.
	Examiner HOAN C. NGUYEN	Art Unit 2871

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1) Responsive to communication(s) filed on \_\_\_\_ .

2a) This action is FINAL.                    2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4) Claim(s) 1-4 and 16-23 is/are pending in the application.

4a) Of the above claim(s) 4-15 and 24-27 is/are withdrawn from consideration.

5) Claim(s) \_\_\_\_ is/are allowed.

6) Claim(s) 1,3,16-18,21 and 23 is/are rejected.

7) Claim(s) 2, 4, 19, 20 and 22 is/are objected to.

8) Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on \_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) The proposed drawing correction filed on \_\_\_\_ is: a) approved b) disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12) The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All b) Some \* c) None of:

1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. \_\_\_\_ .
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) The translation of the foreign language provisional application has been received.

15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

1) Notice of References Cited (PTO-892)

2) Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_ .

4) Interview Summary (PTO-413) Paper No(s) \_\_\_\_ .

5) Notice of Informal Patent Application (PTO-152)

6) Other: \_\_\_\_ .

**DETAILED ACTION**

***Election/Restrictions***

Applicant's election without traverse of Species A (Fig. 2A and claims 1-4 and 16-24) in Paper No. 5 is acknowledged.

However, claim 24 recites a limitation "the pressure in the liquid crystal injection chamber is increased gradually to the second pressure during the cooling of said liquid crystal panel", which does not disclose in the elected Species A according to Fig. 2A, where the cooling of said liquid crystal panel **performs after** the liquid crystal injection reached to the second pressure  $X_{atm}$ .

This limitation of claim 24 discloses in a nonelected Species B according to Fig. 3A. Therefore, **claim 24 is withdrawn from further consideration.**

Claims 1-4 and 16-23 are pending in elected Species.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 1, 3, 16-18, 21 and 23 are rejected under 35 U.S.C. 102(b) as being anticipated by Watanabe et al. (US5479284A).

In regard to claims 1 and 6, Watanabe et al. teach (Fig. 11, col. 7 line 35 to col. 8 line 29) a method of fabricating a ferroelectric liquid crystal display comprising:

- maintaining a pressure in a liquid crystal injection chamber at a first pressure, and at the same time maintaining a liquid crystal tray contacted to a liquid crystal panel and an injection hole thereof at a first temperature, to inject a liquid crystal from said liquid crystal tray to said liquid crystal panel;
- increasing the pressure in said chamber to a second pressure higher than said first pressure;
- maintaining said second pressure while cooling said liquid crystal panel (chamber temperature 111), and at the same time, maintaining said liquid crystal tray (plate temperature 113) at  $t_1$  at said first temperature.

wherein

- said first temperature is a temperature where the liquid crystal exhibits one liquid crystal phase selected from the group comprising an isotropic phase and a chiral nematic phase, and the liquid crystal injected to said liquid crystal panel is cooled down to the normal temperature to exhibit a smectic phase (col. 7 lines 50-62) according to claims 3 and 21.
- providing the liquid crystal injection chamber and the liquid crystal panel in a vacuum state characterized as having equal pressure between the liquid crystal injection chamber and the liquid crystal panel; increasing a pressure in said

liquid crystal injection chamber from said equal pressure to said first pressure according to claim 17.

- decreasing the temperature of the liquid crystal tray from said first temperature to said second temperature when said liquid crystal panel is cooled to said second temperature according to claim 18.
- the second pressure is maintained during the entire cooling of said liquid crystal panel according to 23.

***Allowable Subject Matter***

2. Claims 2, 4, 19, 20 and 22 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The following is a statement of reasons for the indication of allowable subject matter:

Claims 2 and 19, 20 are allowable since the prior art of record does not anticipate obvious to one ordinary skill in the art of a method of fabricating the ferroelectric liquid crystal display further comprising a step of decreasing the pressure of said liquid crystal injection chamber from said second pressure to a third pressure that is lower than said first pressure when said liquid crystal panel is cooled to said second temperature.

Claims 4 and 22 are allowable since they depend allowable claims.

***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

Mitsui (US5355236A) discloses a method of injecting ferroelectric liquid crystal including multiple pressure changes.

Masaki et al. (US6271907B1) disclose a method of injecting liquid crystal with a program for temperature, pressure and treating time employed in a liquid crystal injection step.

Nakahara et al. (US6104467A) disclose a method of manufacturing liquid crystal display device requiring high gap accuracy.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HOAN C. NGUYEN whose telephone number is (703) 306-0472. The examiner can normally be reached on MONDAY-THURSDAY:8:00AM-4:30PM.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0530.

HOAN C. NGUYEN  
Examiner  
Art Unit 2871

chn  
April 21, 2003

*[Signature]*  
SUPERVISOR  
TELEPHONE (703) 308-0530